



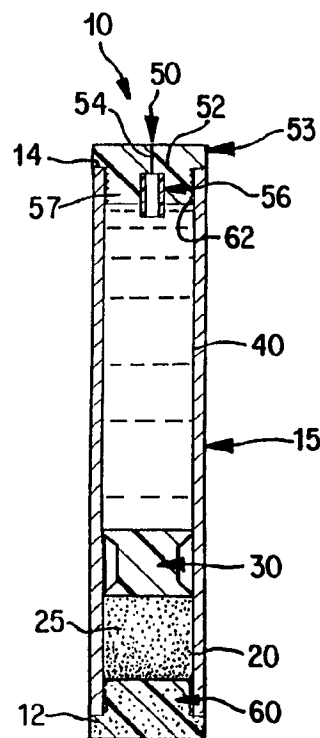
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(21) International Application Number: PCT/US98/04637 (22) International Filing Date: 10 March 1998 (10.03.98) (30) Priority Data: 60/035,607 24 March 1997 (24.03.97) US (71) Applicant (for all designated States except US): ALZA CORPORATION [US/US]; 950 Page Mill Road, P.O. Box 10950, Palo Alto, CA 94303-0802 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): GUMUCIO, Juan, C. [US/US]; 3063 Forbes Avenue, Santa Clara, CA 95051 (US). DIONNE, Keith, E. [US/US]; 4 Hancock Park, Cambridge, MA 02139 (US). BROWN, James, E. [US/US]; 126 Blueberry Hill Drive, Los Gatos, CA 95032 (US). (74) Agents: CLARKE, Pauline, Ann et al.; Alza Corporation, 950 Page Mill Road, P.O. Box 10950, Palo Alto, CA 94303-0802 (US).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> (88) Date of publication of the international search report: 30 December 1998 (30.12.98)

(54) Title: IMPLANTABLE DELIVERY DEVICE WITH SELF ADJUSTABLE EXIT PORT

(57) Abstract

A delivery device having a first chamber containing an osmotic agent, a membrane forming a wall of the first chamber through which fluid is imbibed by osmosis, a second chamber containing a beneficial agent to be delivered, and a moveable piston separating the two chambers. In fluid communication with the second chamber is an orifice which comprises a slit valve. In the presence of pressure, the beneficial agent pushes through the slit, opening up a channel for delivery of the beneficial agent and creating flow. Because the slit remains closed in the absence of flow (or when the pressure is below the pressure required to open the slit), back diffusion of external fluids is eliminated when the slit is closed, which prevents contamination of the beneficial agent in the second chamber by external fluids. In addition, forward diffusion of the beneficial agent out of the capsule is prevented when the slit is closed. The slit valve opens only to the minimum dimension required to allow the flow generated by the osmotic pumping rate. The slit valve also allows a flow path to open around any obstruction in the slit valve to prevent clogging.



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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 98/04637

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A61K9/48

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 318 558 A (LINKWITZ ANDREAS ET AL) 7 June 1994	1,8,12
A	see column 2, line 25-59 see column 3, line 17-21 see column 4, line 50 - column 5, line 8 see claim 1 see figure 1	13,17
A	EP 0 627 231 A (ALZA CORP) 7 December 1994 see page 2, line 11-19 see claim 1 see figure 2	1,12,13, 17
A	WO 93 06819 A (ALZA CORP) 15 April 1993 see page 15, line 24 - page 17, line 26 see figures 3,4	1-3,8-10

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☒ Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5318558	A	07-06-1994	US 5221278 A	22-06-1993
EP 0627231	A	07-12-1994	US 5308348 A	03-05-1994
			US 5456679 A	10-10-1995
WO 9306819	A	15-04-1993	AU 2867492 A	03-05-1993
			EP 0607321 A	27-07-1994
			JP 7500264 T	12-01-1995
			MX 9205850 A	01-06-1993
			NZ 244682 A	23-12-1993
			PT 100944 A	30-06-1994
			US 5795591 A	18-08-1998
			ZA 9207779 A	05-07-1993